

# the condition of education 2000



## INDICATOR 18

### International Comparisons of Student Performance in Mathematics

The indicator and corresponding tables are taken directly from *The Condition of Education 2000*. Therefore, the page numbers may not be sequential.

Additional information about the survey data and supplementary notes can be found in the full report. For a copy of *The Condition of Education 2000*, visit the NCES web site (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000062>) or contact ED PUBs at 1-877-4ED-PUBS.

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## NATIONAL CENTER FOR EDUCATION STATISTICS

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U.S. Department of Education  
Office of Educational Research and Improvement

# Academic Outcomes

## International Comparisons of Student Performance in Mathematics

On average, 4<sup>th</sup>-grade students in the United States scored above the international average in mathematics; students in the 8<sup>th</sup> and 12<sup>th</sup> grades scored below the international average.

The Third International Mathematics and Science Study (TIMSS) is the largest international comparative study of educational achievement, assessing performance in mathematics and science of more than half a million students in 41 countries. In mathematics, on average, U.S. students at the 4<sup>th</sup>-grade level scored above the international average in mathematics, performed above their peers in 12 countries, and scored lower than their peers in 7 countries.

Conversely, both 8<sup>th</sup>- and 12<sup>th</sup>-grade students in the United States scored below the international averages in mathematics. Of the 41 nations participating at the 8<sup>th</sup>-grade level, U.S. students scored higher than their peers in seven countries and were outperformed by students in 20 countries. Of the 21 nations participating at the final year of secondary school level, U.S. students scored, on aver-

age, below students in 14 other countries and above the students in two other countries.

Sex gaps in mathematics performance were apparent in some of the participating countries. At the 4<sup>th</sup>-grade level, male students outperformed their female classmates in 3 of the 25 countries for which data are available. At the 8<sup>th</sup>-grade level, male students outperformed their female counterparts in 8 of the 39 countries for which data are available. In their final year of secondary school, however, males outperformed females in mathematics in 18 of the 21 participating countries. In the United States, males and females scored similarly at all three grade levels. Female students did not score higher than male students at any grade level in any country (see supplemental table 18-1).

MATHEMATICS PERFORMANCE: Average mathematics performance of 4 <sup>th</sup> -grade <sup>1</sup> students: 1995		
Average score relative to U.S.	Country	
Significantly higher	Austria <sup>2</sup>	Korea
	Czech Republic	Netherlands <sup>2</sup>
	Hong Kong	Singapore
	Japan	
Not significantly different	Australia <sup>2</sup>	Ireland
	Canada	Israel <sup>2</sup>
	Hungary <sup>2</sup>	Slovenia <sup>2</sup>
Significantly lower	Cyprus	Latvia (LSS) <sup>2</sup>
	England	New Zealand
	Greece	Norway
	Iceland	Portugal
	International average	Scotland
	Iran, Islamic Republic	Thailand <sup>2</sup>
	Kuwait <sup>2</sup>	

<sup>1</sup> In most countries. See *Supplemental Note 7* for more information.

<sup>2</sup> Did not satisfy one or more of the sampling or other guidelines. In the final year of secondary school, this included the United States. Latvia is designated LSS for Latvian-speaking schools only. See *Supplemental Note 7* for more information.

SOURCES: U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Fourth-Grade Mathematics and Science Achievement in International Context* (NCES 97–255), 1997; U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Eighth-Grade Mathematics and Science Teaching, Learning, Curriculum, and Achievement in International Context* (NCES 97–198), 1996; U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Twelfth-Grade Mathematics and Science Achievement in International Context* (NCES 98–049), 1998.

FOR MORE INFORMATION:  
Supplemental Note 7  
Supplemental Table 18-1



**MATHEMATICS PERFORMANCE: Average mathematics performance of 8<sup>th</sup>-grade<sup>1</sup> students: 1995**

Average score relative to U.S.	Country	
Significantly higher	Australia <sup>2</sup>	Ireland
	Austria <sup>2</sup>	Japan
	Belgium (Flemish)	Korea
	Belgium (French) <sup>2</sup>	Netherlands <sup>2</sup>
	Bulgaria <sup>2</sup>	Russian Federation
	Canada	Singapore
	Czech Republic	Slovak Republic
	France	Slovenia <sup>2</sup>
	Hong Kong	Sweden
	Hungary	Switzerland
	<i>International average</i>	
Not significantly different	Denmark <sup>2</sup>	New Zealand
	England	Norway
	Germany <sup>2</sup>	Romania <sup>2</sup>
	Greece <sup>2</sup>	Scotland <sup>2</sup>
	Iceland	Spain
	Israel <sup>2</sup>	Thailand <sup>2</sup>
	Latvia (LSS)	
Significantly lower	Colombia <sup>2</sup>	Lithuania
	Cyprus	Portugal
	Iran, Islamic Republic	South Africa <sup>2</sup>
	Kuwait <sup>2</sup>	

**MATHEMATICS PERFORMANCE: Average mathematics performance of students in their final year of secondary school: 1995**

Average score relative to U.S.	Country	
Significantly higher	Australia <sup>2</sup>	<i>International average</i>
	Austria <sup>2</sup>	Netherlands <sup>2</sup>
	Canada <sup>2</sup>	New Zealand
	Denmark <sup>2</sup>	Norway <sup>2</sup>
	France <sup>2</sup>	Slovenia <sup>2</sup>
	Germany <sup>2</sup>	Sweden
	Hungary	Switzerland
	Iceland <sup>2</sup>	
Not significantly different	Czech Republic	Lithuania
	Italy <sup>2</sup>	Russian Federation
Significantly lower	Cyprus <sup>2</sup>	South Africa <sup>2</sup>

<sup>1</sup> In most countries. See *Supplemental Note 7* for more information.

<sup>2</sup> Did not satisfy one or more of the sampling or other guidelines. In the final year of secondary school, this included the United States. Latvia is designated LSS for Latvian-speaking schools only. See *Supplemental Note 7* for more information.

SOURCES: U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Fourth-Grade Mathematics and Science Achievement in International Context* (NCES 97–255), 1997; U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Eighth-Grade Mathematics and Science Teaching, Learning, Curriculum, and Achievement in International Context* (NCES 97–198), 1996; U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Twelfth-Grade Mathematics and Science Achievement in International Context* (NCES 98–049), 1998.



FOR MORE INFORMATION:  
 Supplemental Note 7  
 Supplemental Table 18-1

# International Comparisons of Student Performance in Mathematics

Table 18-1 Average mathematics performance (scale score) of students in grades 4, 8, and in their final year of secondary school, by sex and country: 1995

Country	Grade 4 <sup>1</sup>			Grade 8 <sup>1</sup>			Final year of secondary school		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
<b>International average</b>	<b>529</b>	<b>535</b>	<b>533</b>	<b>513</b>	<b>519</b>	<b>512</b>	<b>500</b>	<b>518</b>	<b>485</b>
Australia <sup>2</sup>	546	547	545	530	527	532	522	540	510
Austria <sup>2</sup>	559	563	555	539	544	536	518	545	503
Belgium (Flemish)	—	—	—	565	563	567	—	—	—
Belgium (French) <sup>2</sup>	—	—	—	526	530	524	—	—	—
Bulgaria <sup>2</sup>	—	—	—	540	—	—	—	—	—
Canada <sup>2</sup>	532	534	531	527	526	530	519	537	504
Colombia <sup>2</sup>	—	—	—	385	386	384	—	—	—
Cyprus <sup>2</sup>	502	506	499	474	472	475	446	454	439
Czech Republic	567	568	566	564	569	558	466	488	443
Denmark <sup>2</sup>	—	—	—	502	511	494	547	575	523
England	513	515	510	506	508	504	—	—	—
France <sup>2</sup>	—	—	—	538	542	536	523	544	506
Germany <sup>2</sup>	—	—	—	509	512	509	495	509	480
Greece <sup>2</sup>	492	491	493	484	490	478	—	—	—
Hong Kong	587	586	587	588	597	577	—	—	—
Hungary <sup>2</sup>	548	552	546	537	537	537	483	485	481
Iceland <sup>2</sup>	474	474	473	487	488	486	534	558	514
Iran, Islamic Republic	429	433	424	428	434	421	—	—	—
Ireland	550	548	551	527	535	520	—	—	—
Israel <sup>2</sup>	531	537	528	522	539	509	—	—	—
Italy <sup>2</sup>	—	—	—	—	—	—	476	490	464
Japan	597	601	593	605	609	600	—	—	—
Korea	611	618	603	607	615	598	—	—	—
Kuwait <sup>2</sup>	400	—	—	392	—	—	—	—	—
Latvia (LSS) <sup>2</sup>	525	521	530	493	496	491	—	—	—
Lithuania <sup>2</sup>	—	—	—	477	477	478	469	485	461
Netherlands <sup>2</sup>	577	585	569	541	545	536	560	585	533
New Zealand	499	494	504	508	512	503	522	536	507
Norway <sup>2</sup>	502	504	499	503	505	501	528	555	501
Portugal	475	478	473	454	460	449	—	—	—
Romania <sup>2</sup>	—	—	—	482	483	480	—	—	—
Russian Federation <sup>2</sup>	—	—	—	535	535	536	471	488	460
Scotland <sup>2</sup>	520	520	520	498	506	490	—	—	—
Singapore	625	620	630	643	642	645	—	—	—
Slovak Republic	—	—	—	547	549	545	—	—	—
Slovenia <sup>2</sup>	552	551	554	541	545	537	512	535	490
South Africa <sup>2</sup>	—	—	—	354	360	349	356	365	348
Spain	—	—	—	487	492	483	—	—	—
Sweden	—	—	—	519	520	518	552	573	531
Switzerland	—	—	—	545	548	543	540	555	522
Thailand <sup>2</sup>	490	485	496	522	517	526	—	—	—
United States <sup>2</sup>	545	545	544	500	502	497	461	466	456

— Not available.

<sup>1</sup> In most countries. See *Supplemental Note 7* for more information on the Third International Mathematics and Science Study (TIMSS).

<sup>2</sup> Did not satisfy one or more of the sampling or other guidelines for one or more grade levels. Latvia is designated LSS for Latvian-speaking schools only. See *Supplemental Note 7* for more information.

SOURCE: U.S. Department of Education, NCES, *Pursuing Excellence: A Study of U.S. Fourth-Grade Mathematics and Science Achievement in International Context* (NCES 97–255), 1997; U.S. Department of Education, NCES, *Pursuing Excellence: A Study of U.S. Eighth-Grade Mathematics and Science Teaching, Learning, Curriculum, and Achievement in International Context* (NCES 97–178), 1996; U.S. Department of Education, NCES, *Pursuing Excellence: A Study of U.S. Twelfth-Grade Mathematics and Science Achievement in International Context* (NCES 98–049), 1998.

## International Comparisons of Student Performance in Mathematics

**Table S18-1** Standard errors for the average mathematics performance (scale score) of students in grades 4, 8, and in their final year of secondary school, by sex and country: 1995

Country	Grade 4			Grade 8			Final year of secondary school		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
International average	0.7	0.8	0.8	0.6	0.8	0.7	1.2	1.5	1.6
Australia	3.1	3.5	3.7	4.0	5.1	4.6	9.3	10.3	9.3
Austria	3.1	3.6	3.6	3.0	3.2	4.5	5.3	7.2	5.5
Belgium (Flemish)	–	–	–	5.7	8.8	7.4	–	–	–
Belgium (French)	–	–	–	3.4	4.7	3.7	–	–	–
Bulgaria	–	–	–	6.3	–	–	–	–	–
Canada	3.3	3.4	3.9	2.4	3.2	2.7	2.8	3.8	3.5
Colombia	–	–	–	3.4	6.9	3.6	–	–	–
Cyprus	3.1	3.5	3.3	1.9	2.8	2.5	2.5	4.9	3.7
Czech Republic	3.3	3.4	3.6	4.9	4.5	6.3	12.3	11.3	16.8
Denmark	–	–	–	2.8	3.2	3.4	3.3	4.0	4.0
England	3.2	3.4	4.4	2.6	5.1	3.5	–	–	–
France	–	–	–	2.9	3.1	3.8	5.1	5.6	5.3
Germany	–	–	–	4.5	5.1	5.0	5.9	8.8	8.8
Greece	4.4	5.0	4.5	3.1	3.7	3.1	–	–	–
Hong Kong	4.3	4.7	4.2	6.5	7.7	7.7	–	–	–
Hungary	3.7	4.2	3.9	3.2	3.6	3.6	3.2	4.9	4.8
Iceland	2.7	3.3	3.0	4.5	5.5	5.6	2.0	3.4	2.2
Iran, Islamic Republic	4.0	6.0	5.0	2.2	2.9	3.3	–	–	–
Ireland	3.4	3.9	4.3	5.1	7.2	6.0	–	–	–
Israel	3.5	4.4	4.1	6.2	6.6	6.9	–	–	–
Italy	–	–	–	–	–	–	5.5	7.4	6.0
Japan	2.1	2.5	2.2	1.9	2.6	2.1	–	–	–
Korea	2.1	2.5	2.6	2.4	3.2	3.4	–	–	–
Kuwait	2.8	–	–	2.5	–	–	–	–	–
Latvia (LSS)	4.8	5.5	5.2	3.1	3.8	3.5	–	–	–
Lithuania	–	–	–	3.5	4.0	4.1	6.1	7.3	7.7
Netherlands	3.4	3.8	3.4	6.7	7.8	6.4	4.7	5.6	5.9
New Zealand	4.3	3.7	4.3	4.5	5.9	5.3	4.5	4.9	6.2
Norway	3.0	3.5	3.6	2.2	2.8	2.7	4.1	5.3	4.8
Portugal	3.5	3.8	3.7	2.5	2.8	2.7	–	–	–
Romania	–	–	–	4.0	4.8	4.0	–	–	–
Russian Federation	–	–	–	5.3	6.3	5.0	6.2	6.5	6.6
Scotland	3.9	4.3	3.8	5.5	6.6	5.2	–	–	–
Singapore	5.3	5.5	6.4	4.9	6.3	5.4	–	–	–
Slovak Republic	–	–	–	3.3	3.7	3.6	–	–	–
Slovenia	3.2	3.4	4.0	3.1	3.8	3.3	8.3	12.7	8.0
South Africa	–	–	–	4.4	6.3	4.1	8.3	9.3	10.8
Spain	–	–	–	2.0	2.5	2.6	–	–	–
Sweden	–	–	–	3.0	3.6	3.1	4.3	5.9	3.9
Switzerland	–	–	–	2.8	3.5	3.1	5.8	6.4	7.4
Thailand	4.7	5.8	4.2	5.7	5.6	7.0	–	–	–
United States	3.0	3.1	3.3	4.6	5.2	4.5	3.2	4.1	3.6

— Not available.

SOURCE: U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Fourth-Grade Mathematics and Science Achievement in International Context* (NCES 97–255), 1997; U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Eighth-Grade Mathematics and Science Teaching, Learning, Curriculum, and Achievement in International Context* (NCES 97–178), 1996; U.S. Department of Education, NCES. *Pursuing Excellence: A Study of U.S. Twelfth-Grade Mathematics and Science Achievement in International Context* (NCES 98–049), 1998.